IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:	ROBERTS, David Keith
Serial No.	:	10/518,265
Confirmation No.	:	3538
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Group Art Unit	:	2624
Examiner	:	Andrae S. Allison

APPEAL BRIEF
On Appeal from Group Art Unit 2624

Date: December 3, 2008

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TABLE OF CONTENTS

I. REAL PARTY IN INTEREST

The real party in interest is Koninklijke Philips Electronics N.V., the assignee of record.

II. RELATED APPEALS AND INTERFERENCES

Appellant is not aware of any pending appeals, judicial proceedings, or interferences which may be related to, directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

a) Claims 1 – 3, 5 – 12 and 14 – 21 are pending. Claims 4, 13 and 22 – 24 are cancelled. Claims 1 and 20 are independent.

b) Claims 1 – 3, 5 – 12, 14 and 16 – 21 stand rejected and are the subject of this appeal.

c) Claim 15 is objected to, but is found to contain allowable subject matter.

IV. STATUS OF AMENDMENTS

The claims listed in section "VIII. Claims Appendix" of this Appeal Brief correspond to the claims submitted in Appellant's response of April 2, 2008. No claim amendments have been submitted following Appellant's response of April 2, 2008. Nor are any amendments pending.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The claimed invention, as recited in claim 1, is directed to a method of authenticating an audio-visual signal (page 3, lines 14 – 16) comprising formation of a progressive signature by generating a variable number of signature bits (Fig. 6 and page 5, lines 30 – 34; page 6, lines 1 – 8), wherein said variable number of signature bits increases with the complexity of said audio-visual signal (page 6, lines 10 – 12).

The claimed invention, as recited in claim 20 is directed to a system for authenticating an audio-visual signal (page 3, lines 14 – 16) comprising a device for formation of a progressive signature generating a variable number of signature bits (Fig. 6 and page 5, lines 30 – 34; page 6, lines 1 – 8), wherein said variable number of signature bits increases with the complexity of said audio-visual signal (page 6, lines 10 – 12).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether claims 1 – 3, 5 – 7, 12 – 14 and 18 – 21 are properly rejected under 35 U.S.C. §103(a) as being unpatentable over Celik et al. (NPL document titled "Hieraarchical Watermarking for Secure Image Authentication with Localization", hereinafter "Celik"), in view of Krishnamachari et al. (US Patent No. 6,804,356, hereinafter "Krishnamachari").

B. Whether claims 8, 9, 16 and 17 are properly rejected under 35 U.S.C. §103(a) as being unpatentable over Celik, in view of Krishnamachari, further in view of Inoue et al. (US Patent No. 6,477,276, hereinafter "Inoue").

C. Whether claims 10 and 11 are properly rejected under 35 U.S.C. §103(a) as being unpatentable over Celik, in view of Lee et al. (Pub. No. US2003/0172275, hereinafter "Lee").

VII. ARGUMENT

Appellant respectfully traverses the rejections in accordance with the detailed arguments set forth below.

A. Claims 1 – 3, 5 – 7, 12 – 14 and 18 – 21 are not properly rejected under 35 U.S.C. §103(a) as being unpatentable over Celik in view of Krishnamachari.

It is respectfully submitted that the Examiner has failed to establish a prima facie case of obviousness. The test for determining if a claim is rendered obvious by one or more references for purposes of a rejection under 35 U.S.C. 103 is set forth in MPEP § 706.02(j):

> "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

If the above-identified criteria are not met, then the cited reference(s) fails to render obvious the claimed invention and, thus, the claimed invention as recited in claims 1 – 3, 5 – 7, 12 – 14 and 18 – 21 is distinguishable over the cited references and the rejections should be reversed.

1. Claim 1

Appellant's claim 1, in part, requires:

> "*said variable number of signature bits increases with the complexity of said audio-visual signal.*"

In the final Office Action, page 3, it is conceded by the Examiner that Celik does not teach the method that "*said variable number of signature bits increases with the complexity of said audio-visual signal*," as claimed. Because of this defect in Celik, the Examiner cited Krishnamachari, and alleged that Krishnamachari, Fig. 2B, teaches the above claimed feature. In the Office Action, page 2, the Examiner further asserted that Krishnamachari clearly shows in Fig. 2 that the number of signature bits increases with the complexity of said audio-visual signal. Appellant respectfully disagrees.

In Krishnamachari, Fig. 2A represents the partition of an image into four blocks at scale zero, and Fig. 2B shows each of the blocks of Fig. 2A broken down into four sub-blocks at scale one (Krishnamachari, column 2, lines 38 – 41). However, similar to the teaching in Celik, the teaching in Krishnamachari only describes a hierarchical partitioning of an image at successive levels, and the additional signature bits from the calculation of image characteristics of the blocks at each successive level (column 3, line 59 – column 4, line 12). Appellant submits that Krishnamachari only discloses that, at successive levels of partition, more bits are successively added to the signature. However, Krishnamachari does not disclose that more levels of partition are needed if the audio-video signal is more complex, nor does Krishnamachari disclose any relationship between the number of signature bits and the complexity of the audio-visual signal. Apparently, Krishnamachari only discloses that, for any given image (for example, Fig. 1), individual blocks are broken down into successive scales of greater detail. Since an arbitrary

given image can vary in complexity, the method of Krishnamachari simply obtains successive levels of detail of the image regardless of the complexity of the image. Apparently, Krishnamachari also discloses that alternatively, the number of scales used would depend on the size of the image and the desired length of the signature (column 4, lines 21 – 22). However, nothing elsewhere in Krishnamachari teaches or suggests that the number of scales required depends on the complexity of the audio-visual signal. Since Krishnamachari mentions the size of the image, but not the complexity of the image, this further suggests that the partitioning described in Krishnamachari, Figs. 2A and 2B, is a generic way without regard to the complexity of the image. Therefore, Krishnamachari does not teach or suggest that "*said variable number of signature bits increases with the complexity of said audio-visual signal*" as claimed.

For at least the foregoing reasons, Appellant submits that claim 1 is patentable over Celik and Krishnamachari, either singly or in combination, and therefore the rejection should be reversed.

2. Independent claim 20

Appellant's claim 20, in part, also requires:

> "*said variable number of signature bits increases with the complexity of said audio-visual signal.*"

As pointed out above in the discussion of claim 1 and for similar reasons, Krishnamachari fails to disclose the claimed feature: said variable number of signature bits increases with the complexity of said audio-visual signal. Thus, for at least the foregoing reasons, Appellant respectfully submits that claim 20 is patentable over Celik and Krishnamachari, either singly or in combination, and therefore the rejection should be reversed.

3. Claim 2, 3, 5 – 7, 12 – 14, 18, 19 and 21

Claims 2, 3, 5 – 7, 12 – 14, 18, 19 and 21 respectively depend from claims 1 and 20, and include all the distinguishing features as discussed above with respect to claims 1 and 20. Accordingly, dependent claims 2, 3, 5 – 7, 12 – 14, 18, 19 and 21 are also allowable by virtue of their dependency, as well as the additional subject matter recited therein and the rejections should be reversed.

B. Claims 8, 9, 16 and 17 are not properly rejected under 35 U.S.C. §103(a) as being unpatentable over Celik, in view of Krishnamachari, further in view of Inoue.

1. Claims 8, 9, 16 and 17

Claims 8, 9, 16 and 17 depend from claim 1 and include all the distinguishing features as discussed above with respect to claim 1. The Examiner apparently only relies on the secondary reference Inoue for teaching the additional features recited in the dependent claims and does not allege that Inoue teaches the features of claim 1, which Celik and Krishnamachari were relied upon as teaching. To avoid repetition, the dependent claims will not be discussed in detail with the understanding that they are patentable at least for the same reasons as discussed above.

Accordingly, since Inoue fails to cure the deficiencies in Celik and Krishnamachari with respect to features in claim 1, dependent claims 8, 9, 16 and 17 are also allowable by virtue of their dependency, as well as the additional subject matter recited therein and the rejections should be reversed.

C. Claims 10 and 11 are not properly rejected under 35 U.S.C. §103(a) as being unpatentable over Celik, in view of Lee.

1. Claims 10 and 11

Claims 10 and 11 depend from claim 1 and include all the distinguishing features as discussed above with respect to claim 1. The Examiner apparently only relies on the secondary reference Lee for teaching the additional features recited in the dependent claims and does not allege that Lee teaches the features of claim 1, which Celik and Krishnamachari were relied upon as teaching. To avoid repetition, the dependent claims will not be discussed in detail with the understanding that they are patentable at least for the same reasons as discussed above.

Accordingly, since Lee fails to cure the deficiencies in Celik and Krishnamachari with respect to features in claim 1, dependent claims 10 and 11 are also allowable by virtue of their dependency, as well as the additional subject matter recited therein and the rejections should be reversed.

CONCLUSION

In light of the above, Appellant respectfully submits that the rejections of claims 1 – 3, 5 – 12 and 14 – 21 are in error, legally and factually, and must be reversed.

Respectfully submitted,

Date: December 3, 2008

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VIII. CLAIMS APPENDIX

1. (Previously presented) A method of authenticating an audio-visual signal comprising

formation of a progressive signature by generating a variable number of signature bits, wherein said variable number of signature bits increases with the complexity of said audio-visual signal.

2. (Previously presented) A method according to claim 1 comprising

splitting said audio-visual signal into blocks and

progressively decreasing the size of said blocks.

3. (Previously presented) A method according to claim 2 further comprising

generating said signature from the contents of said blocks, whereby said number of signature bits progressively increases with decreasing block size.

4. (Cancelled)

5. (Previously presented) A method according to claim 1 further comprising

splitting said audio-visual signal into blocks,

merging similar blocks into regions, and

generating said signature based on said regions.

6. (Previously presented) A method according to claim 5, the merging similar blocks into regions and generating said signature based on said regions further comprising

calculating an image characteristics value for each of said blocks,

assigning blocks with similar image characteristics values to regions,

calculating differences between image characteristics values of said regions, and

generating said number of signature bits based on said differences between said image characteristics values of said regions.

7. (Original) A method according to claim 6, said image characteristics values being DC-values.

8. (Previously presented) A method according to claim 6 wherein the formation of said progressive signature is at least once looped.

9. (Previously presented) A method according to claim 8 wherein the size of said blocks is decreased in each loop.

10. (Previously presented) A method according to claim 1 wherein the length of said signature with a variable number of signature bits is limited to a maximum signature length.

11. (Previously presented) A method according to claim 10 further comprising embedding said signature in said audio-visual signal as a watermark, said maximum signature length being defined as the maximum payload of the watermark.

12. (Previously presented) A method according to claim 1 further comprising implanting said signature in said audio-visual signal and/or storing or transmitting said audio-visual signal, wherein said signature is a watermark.

13. (Cancelled)

14. (Previously presented) A method according to claim 1 further comprising verifying the authenticity of said audio-visual signal by verifying said signature.

15. (Previously presented) A method according to claim 7 whereby the assigning said blocks to regions with similar DC values further comprises repeating:

picking a first block not yet assigned to a region according to a pseudo-random sequence wherein said first block becomes the first block of a new region and the DC-value of said first block becomes the DC-value of said new region, and

examining each neighbouring block of said first block whereby a further block of said neighbouring blocks is assigned to said new region and the DC-value of the new region is updated with the DC-value of the further block if the DC-value of said further block is less than a threshold,

until all blocks are assigned to a region.

16. (Previously presented) A method according to claim 7 whereby the calculating DC-differences between said regions further comprises

arranging the DC-values of said regions in the order in which the regions are formed and

calculating said DC-differences between consecutive regions for all regions.

17. (Previously presented) A method according to claim 6 whereby the splitting said audio-visual signal into blocks includes said blocks being formed in a previously formed region.

18. (Previously presented) A method according to claim 7 whereby said generating signature bits based on said DC-differences includes thresholding said DC-differences.

19. (Previously presented) A method according to claim 1, wherein said audio-visual signal is a digital image or frame of a digital video.

20. (Previously presented) A system for authenticating an audio-visual signal comprising a device for formation of a progressive signature generating a variable number of signature bits, wherein said variable number of signature bits increases with the complexity of said audio-visual signal.

21. (Original) A system for authenticating an audio-visual signal according to claim 20, said device for formation of a progressive signature comprising

a means for splitting said audio-visual signal into blocks,

a means for calculating the DC value of said blocks,

a means for assigning said blocks to regions with similar DC values,

a means for calculating DC-differences between said regions, and

a means for generating said signature bits whereby the signature bits are based on said DC differences.

22. (Cancelled)

23. (Cancelled)

24. (Cancelled)

IX. EVIDENCE APPENDIX

No evidence has been submitted pursuant to §§ 1.130, 1.131, or 1.132 of this title nor any other evidence entered by the examiner and relied upon by appellant in the appeal.

X. RELATED PROCEEDINGS APPENDIX

Appellant is not aware of any appeals or interferences related to the present application.